WOOD, HERRON & EVANS, L.L.P.

BRUCE TITTEL
DONALD F. FREI
DAVID J. JOSEPHIC
DAVID S. STALLARD
J. ROBERT CHAMBERS
GREGORY J. LUNN
KURT L. GROSSMAN
CLEMENT H. LUKEN, JR.
THOMAS J. BURGER
GREGORY F. AHRENS
WAYNE L. JACOBS
KURT A. SUMME
KEVIN G. ROONEY
KEITH R. HAUPT
THEODORE R. REMAKLUS
THOMAS W. HUMPHREY
SCOTT A. STINEBRUNER
DAVID H. BRINKMAN
BEVERLY A. LYMAN, PH.D.

OF COUNSEL
JOHN D. POFFENBERGER
THOMAS W. FLYNN

2700 CAREW TOWER
441 VINE STREET
CINCINNATI, OHIO 45202-2917
TELEPHONE: 513-241-2324
FACSIMILE: 513-241-6234
EMAIL: info@whepatent.com

PATENT, TRADEMARK, COPYRIGHT
AND UNFAIR COMPETITION LAW
AND RELATED LITIGATION

EDMUND P. WOOD 1923-1968
TRUMAN A. HERRON 1935-1976
EDWARD B. EVANS 1936-1971

JOSEPH R. JORDAN
C. RICHARD EBY
DAVID E. PRITCHARD

J. DWIGHT POFFENBERGER, JR.
KATHRYN E. SMITH
KRISTI L. DAVIDSON
P. ANDREW BLATT, PH.D.
DAVID E. JEFFERIES
WILLIAM R. ALLEN, PH.D.
JOHN PAUL DAVIS
DOUGLAS A. SCHOLER
BRETT A. SCHATZ
DAVID W. DORTON
SARAH OTTE GRABER
STEVEN W. BENINTENDI, PH.D.

TECHNICAL ADVISORS
HENRY M. LABODA, PH.D.

December 22, 2004

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to charge Deposit Account 23-3000 in the
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(2 pages)
Appeal Brief (20 pages, including cover
sheet, 14 pages Appeal Brief and 5 pages
Claims Appendix)

From: Scott A. Stinebruner
Reg. No. 38,323

Re: U.S. Patent Application
Serial No. 09/732,189
Filed: December 7, 2000
Applicant: Robert Miller
Art Unit: 2157
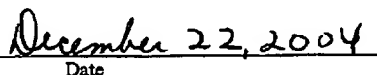Confirmation No.: 1431
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Pages: 23 (including cover sheet)

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Judith L. Volk   December 22, 2004

Judith L. Volk   Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Robert Miller	Art Unit:	2157
Serial No.:	09/732,189	Examiner:	Hussein A. El Chanti
Filed:	December 7, 2000	Atty. Docket No.:	IBM/151
For:	PEER PROTOCOL STATUS QUERY IN CLUSTERED COMPUTER SYSTEM		

Cincinnati, Ohio   December 22, 2004

Mail Stop Appeal Brief - Patents
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P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF (PATENT APPLICATION-37 CFR 41.37)

1. Transmitted herewith is the APPEAL BRIEF in this application with respect to the Notice of Appeal filed on October 22, 2004.

2. **STATUS OF APPLICANT**

   This application is on behalf of

   __XX__   **other than a small entity**

   ___   small entity

   Verified Statement:

   ___ attached

   ___ already filed

3. **FEE FOR FILING APPEAL BRIEF**

   Pursuant to 37 CFR 1.17(f) the fee for filing the Appeal Brief is:

   ___   Small entity $250.00

   __XX__   **Other than a small entity**   **$500.00**

Page 1 of 2
Serial No. 09/732,189
IBM Docket ROC920000125US1
WH&E IBM/151
Appeal Brief Transmittal

PAGE 2/23 * RCVD AT 12/22/2004 3:04:04 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/3 * DNIS:8729306 * CSID:513 241 6234 * DURATION (mm-ss):08-46

4. EXTENSION OF TERM

Applicant petitions for an extension of time under 37 C.F.R. 1.136(a) for the total number of months checked below:

Months		Fee for other than small entity	Fee for small entity
_____	one month	$ 120.00	$ 60.00
_____	two months	...... 450.00	.... 225.00
_____	three months	.... 1,020.00	.... 510.00
_____	four months	..... 1,590.00	.... 795.00
_____	five months	..... 2,160.00	..... 1,080.00

Fee: $ _____

If an additional extension of time is required, please consider this a petition therefor.

5. TOTAL FEE DUE

The total fee due is:

Appeal brief fee $500.00

Extension fee _____

6. FEE PAYMENT

_____ Attached is a check in the sum of $ _____

XX Charge fee of $500.00 to Deposit Account No. 23-3000.

7. FEE DEFICIENCY

XX Charge any additional extension fee required or credit any overpayment to Deposit Account No. 23-3000.

WOOD, HERRON & EVANS, L.L.P.

By _____
Scott A. Stinebruner
Reg. No. 38,323

Reg. No. 36,330

2700 Carew Tower
441 Vine Street
Cincinnati, Ohio 45202
(513) 241-2324

Page 2 of 2
Serial No. 09/732,189
IBM Docket ROC920000125US1
WH&E IBM/151
Appeal Brief Transmittal

PAGE 3/23 * RCVD AT 12/22/2004 3:04:04 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/3 * DNIS:8729306 * CSID:513 241 6234 * DURATION (mm-ss):08-46

Attorney Docket No. IBM/151   **PATENT**
Confirmation No. 1431

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte Robert Miller

Appeal No. _____
Application No. 09/732,189

APPEAL BRIEF

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Robert Miller	Art Unit:	2157
Serial No.:	09/732,189	Examiner:	Hussein A. El Chanti
Filed:	December 7, 2000	Atty. Docket No.:	IBM/151
For:	PEER PROTOCOL STATUS QUERY IN CLUSTERED COMPUTER SYSTEM		

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Alexandria, VA 22313-1450

APPEAL BRIEF

I. REAL PARTY IN INTEREST

This application is assigned to International Business Machines Corporation, of Armonk,
New York.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

Claims 1-26 are pending in the Application.   All pending claims stand rejected, and are
now on appeal.

IV. STATUS OF AMENDMENTS

No amendments have been filed prior to or subsequent to final rejection (Paper No. 11).

V. SUMMARY OF CLAIMED SUBJECT MATTER

Applicant's invention is generally directed to an apparatus, program product and method that locally track protocol progress information within each member of a group of a clustered computer system, for the purpose of identifying at least one problematic member of the group. By locally tracking such information, any member of the group may be directed to provide such information on demand in response to a query directed to such member. As a consequence, if there are N members of a group, and one is problematic, the probability of successfully obtaining the protocol progress information via a query directed to an arbitrary group member is at worst $(N-1)/N$ (assuming a problematic member is incapable of responding to a query). Typically, in such a situation, at most two requests would be needed to obtain the necessary information.

A clustered computer system is a computer system where multiple computers, or nodes, are networked together to present a single system image (Application, p. 1, lines 10-14). Clusters perform tasks through the performance of jobs running on each node, which may be logically organized together into a "group" to perform collective tasks, where each affiliated job is referred to as a "member" of the group (Application, p. 2, lines 1-5). Joint operations performed by members of a group are referred to as "protocols", and in some clustered systems these protocols are implemented as "peer protocols", where "all members receive a message and each member is required to locally determine how to process the protocol and return an acknowledgment indicating whether the message was successfully processed by that member" (Application, p. 2, lines 13-16).

Applicants invention addresses the problem that arises in clustered computer systems whereby the failure of a member of a group to respond quickly (or at all) to a protocol request will typically slow down the rest of the members, often because each member is required to wait for acknowledgments from all other members before proceeding on to a next protocol (Application, p. 2, lines 19-30). Traditionally, when one member is stuck or slow, all members appear to be stuck or slow as well, and as a result, it becomes difficult to isolate the problem to a particular member.

Embodiments of the invention address this problem by requiring each member to locally track protocol progress information, and then configuring each member to respond to a query by providing its locally tracked protocol progress information (Application, p. 4, lines 1-12).

In some embodiments, each member participating in a protocol is required to send an ACK message to each other member in the group when the member has completed processing of the protocol. In this regard, protocol progress information may be locally tracked by tracking, within each member, a current ACK round for such member, as well as the last ACK round received from each other member (Application, p. 10, lines 3-17). By doing so, identification of a slow or stuck member is often trivial from a review of the protocol progress information, as a slow or stuck member will have a last ACK round received value that lags that of the other members (Application, p. 10, lines 18-25).

An additional feature supported by embodiments of the invention is the ability to monitor, in a member of a cluster group, for receipt of a query message while that member is waiting on a resource, and providing protocol status information in response to receipt of the query message (Application, p. 4, lines 18-22). This feature may be implemented, for example, by placing protocol messages on a message queue in a member, and continuing to monitor for query messages while a protocol is being processed and waiting on a resource (Application, p. 12, line 14-p. 13, line 12, Fig. 6). The protocol being waited upon may be a peer protocol, or a local protocol, e.g., a protocol waiting on a lock or a creation of a new job (Application, p. 11, lines 3-9).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,392,993 to Hamilton et al. (hereinafter *Hamilton*).

VII. ARGUMENT

A. Claims 1-26 are not anticipated by *Hamilton*

Applicants respectfully submit that the Examiner's rejections of claims 1-26 are not supported on the record, and should be reversed. Anticipation of a claim under 35 U.S.C. §102 requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros., Inc. v. Union Oil Co., 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), *quoted in* In re Robertson, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999). Absent express description, anticipation under inherency requires extrinsic evidence that makes it clear that "the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Continental Can Co. v. Monsanto Co., 20 USPQ2d 1746, 1749 (Fed. Cir. 1991), *quoted in* In re Robertson at 1951. "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Continental Can at 1749, *quoted in* In re Robertson at 1951.

Applicant respectfully submits that *Hamilton* does not disclose the various features recited in claims 1-26, and as such, the rejections thereof should be reversed. Applicant will hereinafter address the various claims that are the subject of the Examiner's rejection in order, starting with the independent claims, and then addressing additional dependent claims reciting additional subject matter that is distinguishable from *Hamilton.*

Independent Claim 1

Turning first to the rejection of independent claim 1, this claim generally recites a method of determining a status of a peer protocol initiated on a plurality of members of a group in a clustered computer system. The method includes locally tracking protocol progress information within each member of the group, and responding to a query directed to a selected member of the group by providing the protocol progress information locally tracked by the selected member.

Hamilton, on the other hand, lacks a number of features recited in claim 1, and therefore falls short of anticipating the claim. In particular, claim 1 recites a method of determining the

status of a "peer protocol" initiated on a plurality of members of a group in a "clustered computer system." *Hamilton*, on the other hand is completely silent with respect to clustering or to peer protocols. Indeed, neither concept is mentioned in the entirety of *Hamilton*. Furthermore, given that these limitations in the preamble serve to define terms used elsewhere in the claim, these limitations are properly subject to patentable weight.

As noted above, a peer protocol in a clustered computer system is a protocol where "all members receive a message and each member is required to locally determine how to process the protocol and return an acknowledgment indicating whether the message was successfully processed by that member" (Application, p. 2, lines 13-16). *Hamilton*, on the other hand, is directed merely to a multicasting protocol, where a transmitting system sends multi-packet messages to a plurality of recipients, with the option of requesting acknowledgments from the recipients (referred to as a "positive reliability mode".) The transmitting system tracks acknowledgments received from recipients, and retransmits when acknowledgments are not received from all recipients (abstract). Of note, however, the recipients do no tracking of status other than whether all packets of a message are received by that recipient (col. 12, lines 50-55), which may be used to force a NAK to be returned to the transmitting system when some of the packets of a message are never received. There is no disclosure in *Hamilton* of any functionality analogous to a "peer protocol" as recited in claim 1.

The Examiner apparently argues in the Final Office Action of July 23, 2004, that *Hamilton* discloses a peer protocol by virtue of the disclosure of a UDP protocol, and furthermore, that the clients and servers in *Hamilton* correspond to a "group" as claimed. The Examiner's argument, however, disregards the additional characterization in claim 1 of the peer protocol being initiated on a plurality of members of a group "in a clustered computer system." Clustering is a well understood concept in the art, and is not merely a collection of networked computers. As noted above, clustering implies multiple computers participating in protocols and presenting a single system image. A simple UDP protocol as relied upon by the Examiner, used to communicate between clients and servers, does not correspond to a peer protocol in a clustered

computer system as defined in claim 1. Therefore, Applicants submit that *Hamilton* fails to anticipate this feature of claim 1.

In addition, claim 1 recites the concept of locally tracking the "protocol progress information" within "each member of the group." Put another way, every member of the recited group is responsible for locally tracking the progress of the peer protocol. As noted above, however, *Hamilton* discloses only a multicasting messaging protocol that, in one embodiment, utilizes a positive reliability mode whereby recipients of a multicast message send acknowledgments back to a sending system. Columns 3 and 4 of the reference, which have been cited by the Examiner, merely disclose that a sending system is capable of tracking acknowledgments received from the recipient systems to which a packet has been sent. This disclosure, however, is deficient in several regards.

First, tracking the receipt of acknowledgments to a packet falls short of "locally tracking protocol progress information." As described, for example, at page 2 of the application, a "protocol" in the context of a clustered computer system refers to the performance of operations to be performed by the members of a group in a cluster. Lines 13-20, in particular, describe how peer-type protocols are handled by multiple members using ordered message-based communications. Members are prohibited from proceeding on with other work until acknowledgments from all members for a particular requested protocol have been received. The simple transmission of a multicast packet is not analogous to a "protocol," and as such, tracking acknowledgments to a multicasting packet is not analogous to tracking the progress of a protocol.

Second, claim 1 recites that the local tracking of protocol progress information is performed by each member of the group. The passages cited by the Examiner in *Hamilton*, however, merely disclose a single system (the sending system) that arguably tracks the receipt of acknowledgments from recipient systems. There is nothing in the cited passages that discloses or even suggests that the recipient systems locally track progress information related to the acknowledgments sent by other recipient systems. Put another way, *Hamilton* does not disclose multiple systems, much less each system, tracking acknowledgments.

The Examiner apparently argues in the Final Office Action of July 23, 2004, that the fact that each recipient in *Hamilton* tracks the reception of packets in a message, and sends a NAK when all packets are not received, corresponds to locally tracking "protocol progress information". However, as noted above, "protocol progress information" relates to the progress of a peer protocol, not simply the receipt of data. Indeed, given *Hamilton* merely tracks packets in a multi-packet message, *Hamilton* at most tracks receipt of a message in each recipient. This falls far short, however, of tracking the status of a protocol, much less a protocol that requires participation by multiple members of a group in a clustered computer system. Applicants therefore submit that *Hamilton* fails to anticipate this feature of claim 1.

Claim 1 additionally recites the concept of responding to a query directed to a selected member of a group by providing the protocol progress information locally tracked by that selected member. Here, the Examiner again cites column 4 of *Hamilton*, and in particular, lines 9-17. The cited passage, however, is completely silent with respect to a query that is responded to by providing protocol progress information. The cited passage instead discusses reply messages, which are sent whenever a particular request that has been sent out demands a response, which is above and beyond an acknowledgment. However, the replies described in this passage are not analogous to queries within the context of claim 1. One aspect of the invention recited in claim 1 is that a query can be sent to a member of a cluster group to request that the progress information being tracked by that member be output as a response to the query. There is nothing in *Hamilton*, on the other hand, that discloses or suggests that the acknowledgments that are tracked in a sending system of *Hamilton* are ever provided in response to a particular query directed to the sending system.

Indeed, the Examiner fails to address this feature in the Examiner's response to Applicants' arguments in the Final Office Action of July 23, 2004. However, taking the Examiner's other position in the Examiner's response to Applicants' arguments that protocol progress information is met by each client keeping a list of received packets, and sending NAK's when a packet is not received after expiration of a timer, the Examiner would be required to show that *Hamilton* teaches providing the protocol progress information maintained on a client

(e.g., the list of received packets) in response to a query message directed to that client. *Hamilton*, however, lacks any such functionality, and thus fails to disclose this feature of claim 1. Moreover, even if the Examiner takes the position that the transmission of a NAK corresponds to providing protocol progress information, it is important to note that this transmission occurs in response to expiration of a timer, rather than in response to a query directed to the client, as would be required to anticipate claim 1.

Accordingly, Applicant respectfully submits that *Hamilton* fails to disclose each and every feature recited in claim 1. Claim 1 is thus novel over *Hamilton*.

Applicant also respectfully submits that claim 1 is non-obvious over *Hamilton*, as there is no suggestion in *Hamilton* or elsewhere in the prior art to modify the multicasting protocol of *Hamilton* to be used in a clustered computer environment, nor to provide the ability to both locally track the progress of a peer protocol and respond to a query directed to a particular member that results in the output of the tracked information. Accordingly, Applicant also respectfully submits that claim 1 is non-obvious over *Hamilton* and the other prior art of record. Reversal of the Examiner's rejection of claim 1, as well as allowance of the claim, and of claims 2-13 which depend therefrom, are therefore respectfully requested.

Independent Claims 14, 22 and 23

Next, with respect to independent claims 14, 22, and 23, as with claim 1, each of these claims recites the concept of tracking the status of a peer protocol initiated on a plurality of members of a group in clustered computer system. Furthermore, each of these claims likewise recites the provision of tracked protocol progress information in response to a query directed to a member of the group. As discussed above in connection with claim 1, *Hamilton* neither discloses nor suggests either the tracking of the progress of a peer protocol initiated on a plurality of members of a group in a clustered computer system, or the provision of tracked protocol progress information in response to a specific query directed to one of the members.

Furthermore, with respect to claims 14 and 23, the fact that the protocol progress information is being tracked for a peer protocol initiated on a plurality of members of a group in

a clustered computer system is recited in the body of the claims, so the Examiner cannot discount these features solely due to their presence in the preamble of a claim. In addition, with respect to claim 22, this claim recites "a clustered computer system", which is simply not disclosed in *Hamilton*.

Accordingly, Applicant respectfully submits that independent claims 14, 22, and 23, as well as claims 15-21 and 24 which depend therefrom, are novel and non-obvious over *Hamilton* and the other prior art of record. Reversal of the Examiner's rejections, and allowance of these claims are therefore respectfully requested.

Independent Claim 25

Next, with respect to independent claim 25, this claim recites an apparatus that includes a memory, and a program that monitors for a receipt of a query message by a member of a group in a clustered computer system while a current protocol for the member is waiting on a resource. The recited program also outputs protocol status information in response to receipt of the query message.

In rejecting claim 25, the Examiner relies on columns 3 and 4 of *Hamilton*. *Hamilton*, however, is deficient in a number of respects. First, as discussed above with respect to the preceding claims, *Hamilton* is not directed to a clustered computer system, and thus fails to disclose or suggest the concept of protocols, groups, members, or clustering. In addition, the cited passages are entirely silent with respect to the concept of waiting on a resource, much less monitoring for receipt of a query message while a current protocol is waiting on the resource.

Hamilton also fails to disclose the outputting of protocol status information in response to receipt of a query. From Applicant's reading of the reference, it appears that, while acknowledgments to particular packets are tracked by a sending system, and receipt of packets in a multi-packet message are tracked by recipients, there is no mechanism by which such tracking information is ever output by a sending or receiving system. Applicants also could find no disclosure in *Hamilton* corresponding to a query message that triggers the output of any such information. Put another way, it appears the *Hamilton* tracking is a purely internal mechanism.

In contrast, embodiments consistent with the invention recited in claim 25 may be used, for example, to assist in identifying slow or stuck members in a cluster that may be degrading the overall performance of other members. As discussed, for example, at page 13, lines 18-29, embodiments consistent with the invention recited in claim 25 are able to respond to status queries even when waiting on resources. Furthermore, through the local tracking of protocol progress, the identification of a slow or stuck member does not require accessing that stuck or slow member, and as a result, may assist in diagnosing problems in a much quicker and more efficient manner than would otherwise be required.

Hamilton appreciates none of these features, and as such, fails to anticipate claim 25. Furthermore, no evidence of a motivation to modify *Hamilton* to incorporate any such functionality has been presented, and *Hamilton* therefore fails to render claim 25 obvious. Reversal of the Examiner's rejection of claim 25, and allowance of this claim, and of claim 26 which depends therefrom, are therefore respectfully requested.

Dependent Claims 2 and 15

Dependent claims 2 and 15 are not argued separately.

Dependent Claims 3, 4 and 16

Claims 3, 4 and 16 depend from claims 1 and 14, and are thus patentable based upon their dependency upon these independent claims. However, each of these claims additionally recites the concept of acknowledgment <u>rounds</u> that track the last acknowledgments received from other members of a group. *Hamilton* is entirely silent with respect to the concept of acknowledgment rounds, as the packets sent in *Hamilton* are not ordered or associated with peer protocols within the context of the invention.

Furthermore, the information being tracked includes last ACK round received from <u>other</u> members of a group, as well as a current ACK round for the local member. As noted above, *Hamilton* discloses at most local tracking of packet status in individual senders and recipients.

Neither the sender, nor any recipient, tracks all of such information, and accordingly, *Hamilton* fails to anticipate this additional feature of claims 3, 4 and 16.

Reversal of the Examiner's rejections of claims 3, 4 and 16, and allowance of these claims, are therefore respectfully requested.

Dependent Claim 5

Dependent claim 5 is not argued separately.

Dependent Claims 6 and 17

Claims 6 and 17 depend from claims 1 and 14, and are thus patentable based upon their dependency upon these independent claims. In addition, claims 6 and 17, similar to claim 25, recite the concept of waiting on a resource required by a protocol, and monitoring for receipt of the query while waiting on the resource. As noted above in connection with claim 25, *Hamilton* is entirely silent with respect to monitoring for receipt of a query for progress information while waiting for a resource required by a protocol. The fact that *Hamilton* arguably discloses tracking ACK messages falls far short of disclosing monitoring for receipt of a query while waiting on a resource.

Accordingly, claims 6 and 17 are additionally distinguishable over *Hamilton* based upon these additional features. Reversal of the Examiner's rejections of claims 6 and 17, and allowance of these claims, are therefore respectfully requested.

Dependent Claims 7 and 18

Claims 7 and 18 depend from claims 1 and 14, and are thus patentable based upon their dependency upon these independent claims. In addition, these claims recite that the protocol being waited upon is a peer protocol, which as noted above, is described at page 2 of the application as requiring that all members receive a message, and each member locally determine how to process the message and return an acknowledgment indicating whether the message was successfully processed by that member. The protocol recited in these claims relies on tracking

progress locally in each member. *Hamilton*, in contrast, discloses only the sending of acknowledgments by receiving systems to a single sending system, and thus falls far short of disclosing waiting on a peer protocol, as noted above.

Accordingly, claims 7 and 18 are additionally distinguishable over *Hamilton* based upon these additional features. Reversal of the Examiner's rejections of claims 7 and 18, and allowance of these claims, are therefore respectfully requested.

Dependent Claims 8 and 19

Claims 8 and 19 depend from claims 1 and 14, and are thus patentable based upon their dependency upon these independent claims. In addition, these claims recite that the protocol being waited upon is a local protocol, and that the resource being waited on is a local resource. *Hamilton* is entirely silent with respect to the concept of a local protocol or a local resource. The cited passage at col. 28 merely discloses the tracking of ACK messages, and the Examiner provides no indication of what the Examiner considers to correspond to a local protocol or resource that is waited upon.

Accordingly, the Examiner has failed to establish anticipation of claims 8 and 19. Reversal of the Examiner's rejections of claims 8 and 19, and allowance of these claims, are therefore respectfully requested.

Dependent Claim 9

Claim 9 depends from claim 1, and is thus patentable based upon its dependency upon this independent claim. In addition, the claim recites that the local resource is selected from the group consisting of a lock and creation of a new job. The cited passage in *Hamilton*, at column 27, lines 20-21, is entirely silent with respect to either a lock or a new job, and as such, the Examiner has failed to meet the burden required to establish anticipation of this claim. Reversal of the Examiner's rejection of claim 9, and allowance of this claim, are therefore respectfully requested.

Dependent Claim 10

Claim 10 depends from claim 1, and is thus patentable based upon its dependency upon this independent claim. In addition, the claim recites the monitoring of a local message queue for receipt of a query message. As discussed above in connection with claim 25, *Hamilton* is entirely silent with respect to monitoring for receipt of a query. In addition, Applicant can find no disclosure in *Hamilton*, and in particular, in the cited passage at column 28, lines 33-49, purporting to disclose the concept of a message queue or of the monitoring of receipt of a query.

Applicants therefore respectfully submit that the Examiner has failed to meet the burden required to establish anticipation of this claim. Reversal of the Examiner's rejection of claim 10, and allowance of this claim, are therefore respectfully requested.

Dependent Claims 11, 12 and 20

Claims 11, 12 and 20 are not argued separately.

Dependent Claims 13 and 21

Claims 13 and 21 depend from claims 1 and 14, and are thus patentable based upon their dependency upon these independent claims. These claims additionally recite that each member of the group locally tracks protocol progress information associated with each other member in the group. As such, every member in a group is required to track protocol progress information for at least one other member of the group.

In rejecting claims 13 and 21, the Examiner relies on cols. 27 and 28 of *Hamilton*; however, the cited passages merely disclose the ability of a sending or transmitting system to track acknowledgments received from recipients. In addition, *Hamilton* discloses, as noted above, the ability for recipients to track non-receipt of packets in a multi-packet message; however, this tracking performed by a particular recipient is only for packets directed to that recipient. No recipient is able to track packets directed to other recipients. Therefore, even assuming *arguendo* that the recipients in *Hamilton* track protocol progress information, these recipients do not do so for other entities in the network.

Claims 13 and 21 require that each member of a group track protocol progress information for each other member of the group. Thus, even if the Examiner argues that the tracking being performed by a sending or transmitting system corresponds to tracking protocol progress information for other members of a group, the recipients are not capable of tracking any progress information for any other member, and as such, *Hamilton* would still fall short of disclosing this claimed feature. Accordingly, the Examiner has failed to establish anticipation of claims 13 and 21. Reversal of the Examiner's rejections of claims 13 and 21, and allowance of these claims, are therefore respectfully requested.

Dependent Claims 24 and 26

Dependent claims 24 and 26 are not argued separately.
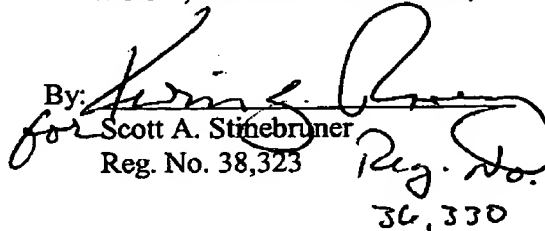
IX. CONCLUSION

In conclusion, Applicant respectfully requests that the Board reverse the Examiner's rejections of claims 1-26, and that the Application be passed to issue. If there are any questions regarding the foregoing, please contact the undersigned at 513/241-2324. Moreover, if any other charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

Date: 12/22/04

By: _____
for Scott A. Stinebruner,
Reg. No. 38,323

2700 Carew Tower
441 Vine Street
Cincinnati, Ohio 45202
(513) 241-2324

36,330

X. CLAIMS APPENDIX: CLAIMS ON APPEAL (S/N 09/732,189)

1. (Original) A method of determining a status of a peer protocol initiated on a plurality of members of a group in a clustered computer system, the method comprising:

   (a) locally tracking protocol progress information within each member of the group; and

   (b) responding to a query directed to a selected member of the group by providing the protocol progress information locally tracked by the selected member.

2. (Original) The method of claim 1, wherein locally tracking protocol progress information includes tracking, within a first member of the group, acknowledgment (ACK) messages directed to the first member by each other member of the group.

3. (Original) The method of claim 1, wherein locally tracking protocol progress information includes:

   (a) tracking, within a first member of the group, a current acknowledgment (ACK) round for the first member, the current ACK round associated with a current peer protocol being processed by the first member; and

   (b) tracking, within the first member, a last ACK round received parameter associated with each other member of the group, the last ACK round received parameter for each other member identifying a peer protocol associated with a last received ACK message from such other member.

4. (Original) The method of claim 3, wherein locally tracking protocol progress information further includes updating the current ACK round for the first member in response to receipt of ACK messages for the current peer protocol from all other members of the group.

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5. (Original) The method of claim 1, wherein locally tracking protocol progress information includes updating the protocol progress information for a first member of the group in response to receipt of an acknowledgment (ACK) message directed to the first member.

6. (Original) The method of claim 1, further comprising:

  (a) waiting on a resource required by a protocol being processed on the selected member; and

  (b) monitoring for receipt of the query by the selected member while waiting on the resource.

7. (Original) The method of claim 6, wherein the protocol is a peer protocol, and wherein waiting on the resource includes waiting for receipt of an acknowledgment (ACK) message directed to the selected member.

8. (Original) The method of claim 6, wherein the protocol is a local protocol, and wherein waiting on the resource includes waiting on a local resource requested by the selected member.

9. (Original) The method of claim 8, wherein the local resource is selected from the group consisting of a lock and a creation of a new job.

10. (Original) The method of claim 6, wherein waiting on the resource includes waiting for receipt of a message by a local message queue for the selected member, and wherein monitoring for receipt of the query includes monitoring the local message queue for receipt of a query message.

11. (Original) The method of claim 1, wherein locally tracking protocol progress information within each member of the group includes locally tracking within the selected member protocol progress information associated with at least one other member in the group.

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12. (Original) The method of claim 1, wherein locally tracking protocol progress information within each member of the group includes locally tracking within the selected member protocol progress information associated with all other members in the group.

13. (Original) The method of claim 1, wherein locally tracking protocol progress information within each member of the group includes locally tracking within each member protocol progress information associated with each other member in the group.

14. (Original) An apparatus, comprising:

    (a) a memory; and

    ·(b) a program resident in the memory, the program configured to determine a status of a peer protocol initiated on a plurality of members of a group in a clustered computer system by locally tracking protocol progress information within at least one member of the group, and providing the protocol progress information locally tracked by a member of the group in response to a query directed to such member.

15. (Original) The apparatus of claim 14, wherein the program is configured to locally track protocol progress information by tracking, within a first member of the group, acknowledgment (ACK) messages directed to the first member by each other member of the group.

16. (Original) The apparatus of claim 14, wherein the program is configured to locally track protocol progress information by tracking, within a first member of the group, a current acknowledgment (ACK) round for the first member, and tracking, within the first member, a last ACK round received parameter associated with each other member of the group, wherein the current ACK round is associated with a current peer protocol being processed by the first member, and wherein the last ACK round received parameter for each other member identifies a peer protocol associated with a last received ACK message from such other member.

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17. (Original) The apparatus of claim 14, wherein the program is further configured to wait on a resource required by a protocol being processed on the selected member, and monitor for receipt of the query by the selected member while waiting on the resource.

18. (Original) The apparatus of claim 17, wherein the protocol is a peer protocol, and wherein the program is configured to wait on the resource by waiting for receipt of an acknowledgment (ACK) message directed to the selected member.

19. (Original) The apparatus of claim 17, wherein the protocol is a local protocol, and wherein the program is configured to wait on the resource by waiting on a local resource requested by the selected member.

20. (Original) The apparatus of claim 17, wherein the program is configured to locally track protocol progress information by locally tracking within a first member protocol progress information associated with at least one other member in the group.

21. (Original) The apparatus of claim 17, wherein the program is configured to locally track protocol progress information by locally tracking within each member protocol progress information associated with each other member in the group.

22. (Original) A clustered computer system, comprising:
    (a) a plurality of nodes coupled to one another over a network;
    (b) a plurality of member jobs defining a group and configured to be executed by at least one of the plurality of nodes; and
    (c) a program configured to be executed by at least one of the plurality of nodes to determine a status of a peer protocol initiated on the plurality of members by locally tracking protocol progress information within at least one member of the group, and providing the protocol progress information locally tracked by a member of the group in response to a query directed to such member.

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23. (Original) A program product, comprising:

    (a) a program configured to determine a status of a peer protocol initiated on a plurality of members of a group in a clustered computer system by locally tracking protocol progress information within at least one member of the group, and providing the protocol progress information locally tracked by a member of the group in response to a query directed to such member; and

    (b) a signal bearing medium bearing the program.

24. (Original) The program product of claim 23, wherein the signal bearing medium includes at least one of a recordable medium and a transmission medium.

25. (Original) An apparatus, comprising:

    (a) a memory; and

    (b) a program, resident in the memory, the program configured to monitor for receipt of a query message by a member of a group in a clustered computer system while a current protocol for the member is waiting on a resource, the program further configured to output protocol status information in response to receipt of the query message.

26. (Original) The apparatus of claim 25, wherein the resource is selected from the group consisting of a local resource and an acknowledgment (ACK) message.